

A Revision of the Buprestid Beetles of the Genera *Toxoscelus* and *Cryptodactylus* in Japan and its Adjacent Regions

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Since E. SAUNDERS described *Cryptodactylus auriceps* from Japan in 1873, classification of the buprestid species belonging to the genera *Cryptodactylus* DEYROLLE, 1864, and *Toxoscelus* DEYROLLE, 1864, in the Far East has been so confused that the present author is going to review the genera in this region, especially in such fringing islands of eastern Asiatic Continent as Japan, the Ryukyu Archipelago and Formosa.

A key to the species of the genera found in these regions is given in the following lines.

Key to the Species and Subspecies of the Genera *Toxoscelus* and *Cryptodactylus* in Japan, Formosa and the Ryukyus

1. Tibiae dilated for insertion of tarsi in repose (*Cryptodactylus*).....2.
- Tibiae arcuate, leaving a space between them and femora, and not dilated for insertion of tarsi (*Toxoscelus*).....3.
2. Second band of elytral ornamentation forming an eye-shaped ring at the sutural part; pygidium with a short denticle at the centre of apex.....
.....*C. shirahatai* Y. KUROSAWA, nov.
- Second band of elytral ornamentation not forming an eye-shaped ring at the sutural part, but it is doubled there and connected with the basal band which is broad and distinct; pygidium sharply pointed at the middle of apex, but distinctly emarginate on each side of the denticle.....*C. manchuricus* Y. KUROSAWA, nov.
3. Ground colour of elytra brighter, cupreous or aeneous, with a distinct violaceous or brassy tinge; apex of last ventral segment rounded (male) or with four denticles on each side (female), but the outermost denticle is somewhat reduced; male genital apparatus normal, not dilated latero-apically.....4.
- Ground colour of elytra darker, blackish, sometimes with a slight aeneous or violaceous tinge or entirely dark aeneous; apex of last ventral segment somewhat obtusely angulate (male) or with four or three distinct denticles on each side (female); male genital apparatus strongly dilated latero-apically.....10.
4. Elytra ornamented with markings of silver-whitish pubescence.....5.
- Elytra cupreoaeneous, unicolorous, without pubescent markings.....
.....*T. sasakii* Y. KUROSAWA, 1957

5. Sides of pronotum very finely but distinctly crenulate.....6.
- Sides of pronotum not crenulate.....9.
6. Body above aeneous or brassy aeneous.....7.
- Body above aeneo-cupreous, with distinct violaceous tinge on elytra.....8.
7. Elytral apex unarmed; punctures on pronotum finer on the anterior half; elytral markings inconspicuous.....*T. miwai miwai* Y. KUROSAWA, nov.
- Elytral apex finely denticulato-serrate; punctures on elytra coarser and larger; elytral markings conspicuous.....*T. miwai makiharai* Y. KUROSAWA, nov.
8. Body above darker; elytral apex very finely but distinctly denticuloserrate; elytra distinctly and transversely rugose at the basal half.....
.....*T. yakushimensis hatayamai* Y. KUROSAWA, nov.
- Body above brighter; elytral apex unarmed; elytra without distinct rugosity, though sometimes obscurely rugose.....
.....*T. yakushimensis gressitti* Y. KUROSAWA, nov.
9. Rugae on pronotum stronger, with the punctures stronger, deeper and coarser; elytral ornamentation less distinct and fine.....
.....*T. yakushimensis yakushimensis* Y. KUROSAWA, 1957.
- Rugae on pronotum weaker, with the punctures weaker and finer; elytral ornamentation more distinct.....*T. yakushimensis akiyamai* Y. KUROSAWA, nov.
10. Middle tibiae slenderer, arcuate at the basal half; fourth antennal segment distinctly longer than the third or fifth; elytral apex separately rounded, with the outer side rounded; rugosity on pronotum weaker, with the interstices narrow and somewhat punctato-rugose and the rugae broad and not sharp; apex of the last ventral segment with three distinct denticles on each side (female).....
.....*T. yokoyamai* Y. KUROSAWA, nov.
- Middle tibiae robust, strongly and rather semicircularly and entirely arcuate; fourth antennal segment about as long as the third and distinctly shorter than the fifth; elytral apex separately but narrowly rounded or subacute or conjointly obtuse, with the outer side somewhat oblique; rugosity on pronotum stronger, with the interstices somewhat broader, but not or hardly punctato-rugose; apex of the last ventral segment with four distinct denticles on each side (female). . 11.
11. Elytral apex conjointly obtuse, with the margin unarmed; rugosity on pronotum stronger and sharply defined, with the depressed interstices broad, strongly and evenly imbricato-reticulate, causing the rugae sharply elevated; denticles at the apex of the female last ventral segment stronger, more strongly produced, but somewhat truncate at the tip of each denticle. . *T. amamiensis* Y. KUROSAWA, 1963.
- Elytral apex separately rounded or subacute with the outer side rounded or oblique and very finely but distinctly serrate; rugosity on pronotum not so strong, broader and not so sharp as in *amamiensis*, with the depressed interstices uneven; denticles at the apex of the female last ventral segment weaker, finer and rather even, but sharp at the tip of each denticle.....12.
12. Elytra densely and finely imbricate; body above darker, blackish, with pronotum

sometimes with aeneous or violaceous tinge; apex of the last ventral segment in male obtusely angulate and obliquely straight on each side.

. *T. auriceps auriceps* (E. SAUNDERS, 1873).

- Elytra strongly and coarsely imbricate; body above with distinct aeneous tinge; apex of the last ventral segment in male obtusely angulate and sinuate on each side. *T. auriceps tokarensis* Y. KUROSAWA, nov.

Cryptodactylus shirahatai sp. nov.

Body moderate and elongate, subdeplanate above; body above entirely black, and adorned with ornamentations of silver-whitish pubescence, but the head is somewhat tinged with violaceous colour; body beneath black, brighter than above; antennae and legs blackish, with tarsal lamellae brownish.

Head small, longitudinally but shallowly grooved on vertex, which is somewhat gibbose on each side of the median groove and strongly rugoso-punctate; frons slightly convex, densely rugoso-punctate and clothed with semirecumbent, short, dark greyish or blackish hairs, partly mixed with mass of silver-whitish hairs; transverse groove just above antennal cavities bilobed and ∞ -shaped; clypeus narrow, very finely shagreened, with the anterior margin transverse and somewhat truncate; antennal cavities large and transverse, with the interior and posterior margins narrowly reflexed; eyes slightly converging below, with the interior margin somewhat arcuate; antennae short and compact, with the first segment stoutest, short fusiform, and about 1.5 times as long as the second, which is stout and short fusiform, the third distinctly shorter than the second, but slightly longer than the fourth, the fifth to the apical one strongly serrate and distinctly wider than long.

Pronotum transverse, about 1.5 times as wide as long, and widest at the part just before the basal fourth; sides strongly and obliquely expanded from the basal angle to the level of the maximum width, where they are obtusely angulate, subparallel to anterior third, where they are arcuate, then arcuately and strongly attenuate to anterior angles, which are obtuse in dorsal aspect, but abased and subrectangular in lateral aspect; anterior margin bisinuate, with the median lobe arcuately produced; posterior margin bisinuate, with the median lobe arcuately emarginate just before scutellum; marginal carinae entire, bisinuate at basal half; prehumeral carinae distinct, slightly sinuate, vanished posteriorly by an ear-shaped depression and anteriorly not reaching the anterior margin; disk uneven, with a large, deep, transverse ear-shaped depression on each side of the basal half, but each depression extends towards scutellum and touches the oblique part of the lateral margin; surface densely rugoso-punctate, and partly scattered with semirecumbent, silver-whitish hairs, but the rugae are rather concentric to the middle in the anterior half. Scutellum subtriangular, sharply pointed posteriorly, with the anterior margin arcuately produced.

Elytra slightly narrower than pronotum, widest at posterior five-ninths, about 2.4 times as long as wide and about 3.2 times as long as pronotum; sides subrectangular

and rounded at humeri, slightly attenuate to anterior two-fifths, then swollen to the maximum width, where they are arcuately rounded, then obliquely attenuate to apices, which are separately and narrowly rounded and very finely and obsoletely denticulate; suture narrowly reflexed in posterior half; disk subdeplanate, with the basal depressions shallow and extending along the basal margin; basal lobes broad and sinuate exteriorly; surface variolately rugoso-punctate at the humeral parts, rugoso-imbricate or rugoso-punctured all over, but the imbrication or punctuation gradually becomes sparser and finer towards apex; ornamentation consisting of subrecumbent silver-whitish hairs arranged on each elytron as follows, though seemingly black parts are clothed with semirecumbent black inconspicuous hairs: a somewhat C-shaped narrow inconspicuous band which extends anteriorly from scutellar part towards humerus along the base and posteriorly surrounding the humeral part to the part just behind humerus; a longitudinally oblong eye-shaped ring which touches the suture interiorly and somewhat extends towards humerus ante-exteriorly; two subparallel undulate or zigzag bands in posterior half, but the upper one of them is more strongly zigzag and becomes double in the exterior half and forms somewhat ocellate ring. Sides of abdomen exposed from elytra broad and ornamented with two spots of subrecumbent silver-whitish hairs.

Prosternum coarsely rugoso-punctate and sparsely clothed with semirecumbent, short greyish or dark whitish hairs; gular lobe distinct, thin, with the anterior margin somewhat arcuately, but broadly and shallowly, emarginate; prosternal process flattened or slightly convex, subconical, but the sides are angulate just behind anterior coxal cavities. Median groove of metasternum narrow and shallow. Abdomen beneath finely and sparsely imbricate and sparsely but uniformly scattered with fine, short, subrecumbent silver-greyish or silver-whitish hairs; apex of the last ventral segment obtusely and broadly angulate, and adorned with seven or eight small denticles (female); pygidium with a short denticle at the centre of apex. Legs short; tibiae slightly dilated exteriorly with the grooves for reposing tarsi somewhat obsolete.

Male unknown.

Length: 6.0 mm; width: 2.0 mm (elytra+abdomen).

Holotype: ♀, Chuoma-tzun, Southern Shansi, North China, 24. v. 1940, K. SHIRAHATA lgt.

Host plant. Uncertain, but presumed to be a kind of elm (*Ulmus* sp.)

Range. North China.

Cryptodactylus manchuricus sp. nov.

This new species stands closely by the preceding species, but differs from it in the following points: 1) median groove of vertex deeper and broader; 2) sides of pronotum arcuately attenuate from basal fourth, where the pronotum is widest, to anterior angles; 3) the second band of the elytral ornamentation not forming an eye-shaped ring at the sutural part, but it is doubled there and connected with the basal band which

is broad and distinct; 4) pygidium sharply pointed at the middle of apex, but it is distinctly emarginate on each side of the denticle; 5) apex of the last ventral segment adorned with more than nine small denticles (female).

Male unknown.

Length: 7.0 mm; width: 2.3 mm (elytra+abdomen).

Holotype: ♀, Fushun, Liaoning, South Manchuria, 14. vii. 1938, M. KONDÔ lgt.

Host plant. Uncertain, but presumably a kind of oak or elm.

Range. Manchuria.

These two species are distinct from any Indochinese species of the genus in the form of their pronotum and elytral ornamentation.

Cryptodactylus mandarinus OBENBERGER, 1917, described from Kiautschou, North China was already transferred to the genus *Toxoscelus* by OBENBERGER himself in 1924, and in the present paper, it falls in a synonym of *T. auriceps* (E. SAUNDERS, 1873), described from Japan. In 1950, the present author considered that *Cryptodactylus auriceps* E. SAUNDERS, 1873, and *C. gracilis* SCHÖNFELDT, 1888, were conspecific, and transferred them to the genus *Toxoscelus*. *Cryptodactylus chinensis* OBENBERGER, 1924, is, therefore, the sole species in our region, which still remains in the genus *Cryptodactylus*. Its original description is, however, so incomplete that it is impossible for us to determine the species. Besides, its type-specimen is not found in OBENBERGER's collection preserved in the National Museum (Museum of Natural History), Prague, Czechoslovakia. This is why the present author dares to describe two new species from North China and Manchuria in the above lines.

Toxoscelus sasakii Y. KUROSAWA, 1957

Toxoscelus sasakii Y. KUROSAWA, 1957, Bull. Natn. Sci. Mus., Tokyo, (40), p. 183.

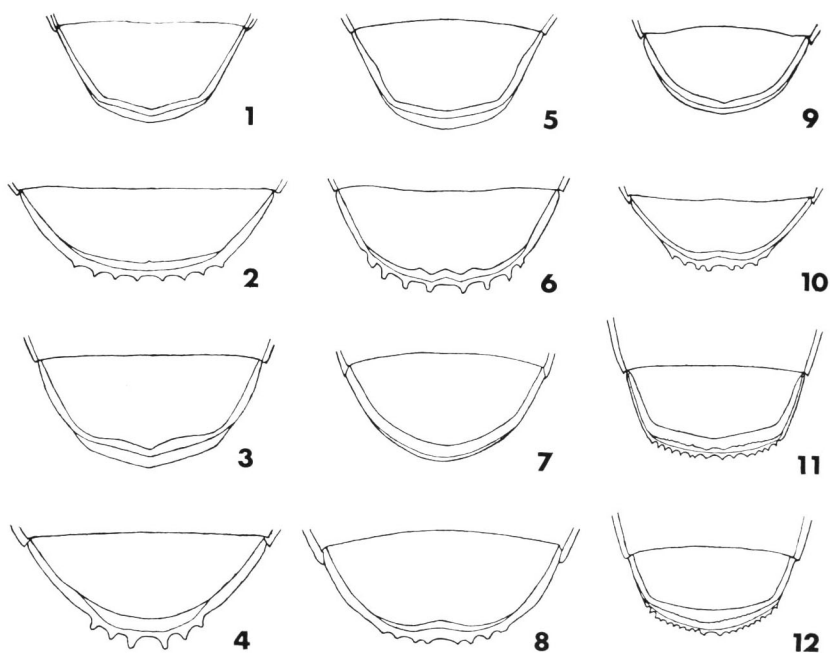
This species is peculiar in the genus *Toxoscelus* DEYROLLE, 1864, for its naked elytra without any pubescent marking. It was described in 1957 on the basis of a single female specimen (regarded as a male in the original description) collected by Mr. H. SASAKI at Mt. Kirishima-yama, southern Kyushu. Since then, it has been recorded from Cape Sata-misaki, the southern end of Kyushu, and the Island of Amakusa, western Kyushu, but the specimens captured are very scarce.

The apex of the last ventral segment is broken in the holotype, and the original account is not accurate as regards this point. A renewed description of the abdominal apex is given below.

Apex of the last abdominal segment evenly rounded (male), or broadly bilobed, with four short blunt denticles on each side of the exterior margin (female).

Specimens examined. 1 ♀ (holotype!), Mt. Kirishima-yama, Kagoshima Pref., 5. viii. 1956, H. SASAKI lgt.; 1 ♂, 1 ♀, Mt. Mayu-yama, Unzen, Nagasaki Pref., 16. viii. 1975, S. IMASAKA lgt.

The host plant of this species is still unknown to the author, but it is presumed to be *Castanopsis Sieboldii* NAKAI or *C. cuspidata* SCHOTTKY. In view of the form of



Figs. 1–12. Anal segments in the genera *Toxoscelus* and *Cryptodactylus* from Japan, the Ryukyus, Formosa and China. — 1, *T. auriceps* E. SAUNDERS, ♂, from Aizuwakamatsu, Japan; 2, *T. auriceps* E. SAUNDERS, ♀, from Niigata, Japan; 3, *T. auriceps tokarensis* subsp. nov., ♂, from Tokara Is.; 4, *T. yokoyamai* sp. nov., ♀, from Formosa; 5, *T. amamiensis* Y. KUROSAWA, ♂, from Amami-Oshima; 6, *T. amamiensis* Y. KUROSAWA, ♀, from Amami-Oshima; 7, *T. sasakii* Y. KUROSAWA, ♂, from Shimabara, Japan; 8, *T. sasakii* Y. KUROSAWA, ♀, from Shimabara, Japan; 9, *T. yakushimensis yakushimensis* Y. KUROSAWA, ♂, from Yakushima, Japan; 10, *T. yakushimensis gressitti* subsp. nov., ♀, from Amami-Oshima; 11, *C. shirahatai* sp. nov., ♀, from Shansi, China; 12, *C. manchuricus* sp. nov., ♀, from Manchuria.

the last ventral segment and of the male genital apparatus, this species belongs to the group of *T. rugicollis* E. SAUNDERS, 1874, described from the Philippines and *T. yakushimensis* Y. KUROSAWA, 1957, found in the Ryukyu Archipelago.

Range. Japan (Kyushu).

Toxoscelus miwai sp. nov.

Toxoscelus miwai OBERBERGER, in litt.

Body small, rather slender, and somewhat deplanate above; dorsal side entirely brassy aeneous, with the apical half of elytra, except for the apical part, darker and somewhat more cuprescent than the other parts; ventral side and legs concolorous with, though brighter than, the dorsal, sometimes with slight cuprescent tinge.

Head small, longitudinally grooved on vertex to just above the centre of frons;

vertex concentrically rugoso-punctate on each side of the median groove; frons slightly convex, transversely rugoso-punctate on the interior half, with a deep transverse groove above each antennal cavity; clypeal suture inconspicuous; clypeus narrow, about three times as long as wide, with the anterior margin arcuately produced; antennal cavities large, subtriangular, with the interior margin slightly elevated; eyes feebly converging below, with the interior margin arcuate; antennae short and compact, with the first and second segments stout, subglobular or fusiform, the third to fifth about equal in length.

Pronotum transverse, about 1.55 times as wide as long, and widest at or just before the middle; sides strongly arcuately or semicircularly expanded, not crenulate, but they are somewhat sinuate before the posterior angles, which are obtuse and rounded; anterior margin bisinuate, with the median lobe broadly arcuate; anterior angles slightly produced in dorsal aspect, acute and abased in lateral aspect; posterior margin strongly and angulately emarginate just before the basal lobe of elytra, and broadly subtruncate at the antescutellar part; marginal carinae entire, sinuate in the posterior half in lateral aspect; disk uneven, with an obsolete median depression and, on each side, a very large ear-shaped depression, which broadly extends from the anterior angle to just before the posterior angle along the lateral margin, then extends internally to the middle, but the median depression is bipartite into rather conspicuous, longitudinally elliptical anterior part and a very obsolete antescutellar posterior part; surface densely rugoso-punctate, but the rugosity becomes parallel to the lateral margin at the sides. Scutellum subtriangular, minutely shagreened, with the anterior margin arcuate.

Elytra slightly narrower than or as wide as pronotum, widest at the apical three-fifths, about twice as long as wide, and about 3.5 times as long as pronotum; sides rounded at humeri, sinuate to apical three-fifths, where they are broadly rounded, then obliquely attenuate to the apices, which are separately acute though rounded at the tips and unarmed; suture somewhat reflexed at the posterior half; disk obsoletely depressed along suture in the posterior half, with the basal depressions broad and shallow; basal lobes angulate, with the outer margin sinuate; surface densely, obscurely and transversely rugoso-imbricate in the basal half, densely imbricate in the apical half, and ornamented with short, semirecumbent, silver-whitish hairs, which are arranged on each elytron as follows: a semicircular or lunulate band around each humerus; an eye-shaped round marking at the basal third; a longitudinally elliptical spot just before the middle near the side; a zigzag band just behind the middle; a wavy band at the apical fourth; and the parts between the markings, except for the basal parts, clothed with blackish recumbent hairs.

Prosternum depressed along the anterior margin, which is bilobed; prosternal process flattened, irregularly rugose, with the sides subparallel between the anterior coxal cavities, and the apex sharply pointed. Metasternum longitudinally grooved at the middle. Abdomen beneath more shiny than above, sparsely punctate, and minutely imbricato-reticulate all over the surface; apex of the last ventral segment broadly rounded but somewhat angulate at the middle (male), or slightly bilobed, and

ornamented with four denticles on each side, but the outermost denticle is somewhat reduced and the tip of each denticle is somewhat truncate (female). Legs short, with the anterior tibiae curved, middle tibiae strongly, semicircularly and rather evenly curved, and posterior tibiae rather straight, with the interior ridge sinuate and the outer ridge with brush-like black hairs.

Length: 4.8–5.0 mm; width: 1.4–1.6 mm.

Holotype: ♂, Mt. Omoto-dake, Ishigaki-jima I., 11. v. 1973, K. SUGINO lgt.; allotype: ♀, Yonehara, Ishigaki-jima I., 9. vi. 1974, M. TAKAKUWA lgt.; paratype: ♀, Mt. Banna-dake, Ishigaki-jima I., 15. vi. 1974, O. TAMURA lgt.

Host plant. *Castanopsis lutchuensis* NAKAI.

Range. Ryukyu Islands (Yaéyama Group).

The “type” of *Toxoscelus miwai* OBENBERGER preserved in the National Museum (Museum of Natural History), Prague, Czechoslovakia, is identical with this species. It bears a label, “Loo-Choo, Iriomote, v. 1932, S. HIRAYAMA lgt.” However, OBENBERGER failed to describe this species in his lifetime.

Toxoscelus miwai makiharai subsp. nov.

Different from *T. miwai miwai* m. of Ishigaki-jima in the following points: 1) elytral apex finely, sparsely, but distinctly serrate; 2) surface of elytra more strongly and coarsely punctato-rugose; 3) elytral markings more conspicuous.

Length: 4.7 mm; width: 1.6 mm.

Holotype: ♀, Urabu-dake, Yonaguni-jima I., 13. vi. 1974, H. MAKIHARA lgt.

Range. Ryukyu Islands (Yonaguni-jima).

Toxoscelus yakushimensis Y. KUROSAWA, 1957

Toxoscelus yakushimensis Y. KUROSAWA, 1957, Bull. Natn. Sci. Mus., Tokyo, (40), p. 184.

Toxoscelus auriceps yakushimensis: Y. KUROSAWA, 1963, Icon. Ins. Japan., 2, p. 151.

Body small, somewhat slender, and somewhat deplanate above; dorsal side entirely cupreous, with head, pronotum and the base of elytra tinged with aeneous, and the middle of elytra tinged with violet, but the violet gradually changes to cupreous shimmer towards the apex; antennae dark aeneous; legs and the body beneath dark aeneous, sometimes with a slight cuprescent tinge, but ventral segments are always brighter than the other parts.

Head small, with the median groove deep and running from vertex to the centre of frons; vertex concentrically rugoso-punctate and subgibbose on each side of the median groove; frons distinctly wider than long, swollen in front, longitudinally rugoso-punctate on the upper half, and transversely rugose with the intervals microscopically reticulate on the lower half, with a deep transverse groove just above each antennal cavity; clypeal suture inconspicuous; clypeus strongly narrowed by the antennal cavities, somewhat T-shaped, with the anterior margin arcuately and strongly produced; antennal cavities large, deep, subtriangular, and approximating to each other, with

the interior rim elevated; eyes slightly converging below, with the interior margin arcuately emarginate; antennae short and compact, with the second segment stout, subglobular, the third and fourth about equal in length and form.

Pronotum transverse, about 1.57 times as wide as long, and widest just before the middle; sides strongly, arcuately, and latero-anteriorly expanded, not crenulate, but they are slightly sinuate just before the posterior angles, which are obtuse and produced posteriorly, though blunt and rounded; anterior margin bisinuate, with the median lobe broad and arcuate; anterior angles produced and acute in dorsal aspect, but abased and blunt at the tip in lateral aspect; posterior margin strongly and angulately emarginate at the part of each elytral lobe, and somewhat arcuately emarginate or subtruncate at the ante-scutellar part; marginal carinae entire, bisinuate in lateral aspect; disk uneven, depressed just before scutellum, behind the median lobe of anterior margin, and on each side, the lateral depressions being very large, ear-shaped, and extending latero-anteriorly along the lateral margins to the anterior angles; surface rugosopunctate, with the interstices microscopically reticulate on lateral parts, but the rugae are arranged concentrically on each side just behind the depression on the median lobe of anterior margin and are arranged parallel to lateral margins at the sides. Scutellum subequilaterally triangular, microscopically reticulate or rugose, with the anterior margin slightly arcuate.

Elytra slightly wider than pronotum, about twice as long as wide, about 3.4 times as long as pronotum, and widest just before apical two-fifths, where they are broadly expanded and rounded, then obliquely attenuate to apices, which are very obscurely denticulate with a few obsolete teeth and separately but narrowly rounded, but sometimes they are somewhat angulate on the outer side of each apex; suture narrowly reflexed in apical three-fifths; disk broadly depressed along the basal margin and on each side of scutellum; surface imbricato-rugose in basal half and densely imbricate in apical half, but the rugosity in basal half is arranged obliquely from humeri to scutellum in the basal part and transversely in the post-humeral parts; ornamentation by silver-whitish semirecumbent hairs arranged on each elytron as follows: a narrow lunulate but obscure band around humerus; an eye-shaped round marking at basal third near the suture; an elliptically longitudinal spot just before the middle; a zigzag band just behind the middle; a wavy band at apical fourth; and the parts between the markings sparsely clothed with blackish recumbent hairs, except for the basal and apical parts which are naked.

Prosternum depressed along the anterior margin, which is broadly and somewhat arcuately emarginate at the middle; prosternal process flattened, coarsely reticulate, each reticulation being finely and microscopically reticulate; sides gradually attenuate to just behind the anterior coxal cavities, where they are angulate, then strongly attenuate to apex which is sharply pointed. Metasternum longitudinally grooved at the middle, coarsely rugose and microscopically reticulate. Abdomen beneath brighter than the other parts, shallowly and obscurely punctate, but the punctuation is somewhat rugose; apex of the last ventral segment similar to that of the preceding species, *miwai* m.

Legs short and robust, with the anterior tibiae curved, middle tibiae strongly, semicircularly, and evenly curved, posterior tibiae straight, with the interior ridge sinuate, and the outer ridge irregularly beset with black hairs.

Length: 4.2–4.9 mm; width: 1.3–1.5 mm (elytra+abdomen).

Specimens examined. 1 ♂ (holotype!), 2 ♀♀ (allotype and paratype), Ambô, Yakushima I., 15–17. vi. 1952, Y. KUROSAWA lgt.; 2 ♂♂, Ambô, Yakushima I., 19. vi. 1968, K. TANIZAWA lgt.

Host plant. *Castanopsis lutchuensis* NAKAI (confirmed by the author).

Range. Japan (Yakushima).

Toxoscelus yakushimensis gressitti subsp. nov.

Similar to typical *yakushimensis* m. from the Island of Yakushima, but differing in the following points: 1) sides of pronotum very finely but distinctly crenulate; 2) rugae on the disk of pronotum sharply elevated with the interstices microscopically but rather uniformly imbricato-reticulate; 3) elytral apices unarmed; 4) elytral rugosity denser, weaker and inconspicuous.

Length: 4.3–4.8 mm; width: 1.3–1.5 mm (elytra+abdomen).

Holotype and a paratopotype: 2 ♀♀, Mt. Yuwan-dake, Amami-Oshima, 31. vii. 1963, L. GRESSITT lgt.; paratypes: 1 ♀, Yuwan, Amami-Oshima, 29. vii. 1963, Y. HIRASHIMA lgt.; 1 ♀, Hatsuno, Amami-Oshima, 2. vii. 1971, H. YOKOYAMA lgt.

Host plant. *Castanopsis lutchuensis* NAKAI (confirmed by L. GRESSITT).

Range. Ryukyu Islands (Amami Group).

Toxoscelus yakushimensis akiyamai subsp. nov.

Similar to *yakushimensis yakushimensis* m. from the Island of Yakushima, but differs from it in the following points: 1) rugae on pronotum weaker, with weaker and finer punctures; 2) elytral ornamentations more distinct. It is also similar to *yakushimensis gressitti* m. from the Amami group of the Ryukyu Archipelago, but is distinguished by the following points: 1) side of pronotum not crenulate; 2) body above darker, with stronger aenescent tinge and weaker cuprescent one; 3) head and pronotum more lustrous with weaker microsculpture; 4) elytral apices irregularly, very finely and obscurely denticulato-serrate.

Length: 4.7–5.1 mm; width: 1.4–1.7 mm (elytra+abdomen).

Holotype and a paratopotype: 2 ♀♀, Mt. Yonaha-dake, Okinawa I., 26. vi. 1973, K. AKIYAMA lgt.; paratype: 1 ♀, Mt. Yonaha-dake, Okinawa I., 28. vi. 1972, H. IRIE lgt.; 1 ♀, do., 24. vi. 1974, T. SEINO lgt.

Host plant. *Castanopsis lutchuensis* NAKAI (confirmed by K. AKIYAMA and H. IRIE).

Range. Ryukyu Islands (Okinawa group).

Toxoscelus yakushimensis hatayamai subsp. nov.

Differing from *yakushimensis yakushimensis* m. and *y. akiyamai* m. in very finely but distinctly crenulate sides of pronotum. It differs from *T. y. gressitti* m. in the darker body above and very finely but distinctly denticulato-serrate apices of elytra, which are distinctly and transversely rugose at the basal half.

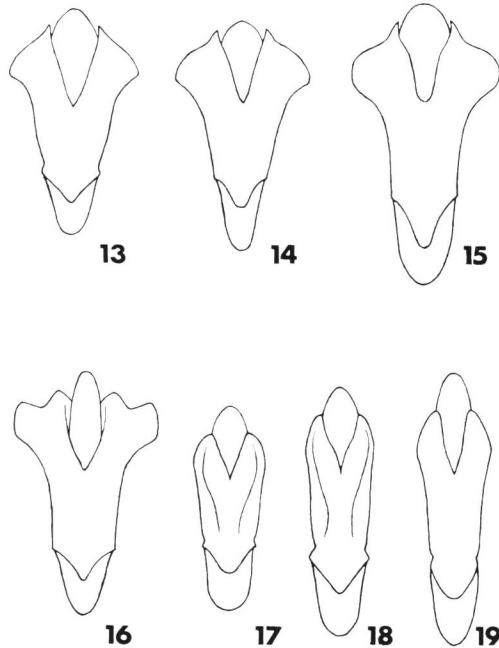
Length: 5.6 mm; width: 1.7 mm (elytra+abdomen).

Holotype: ♀, Yatsude, Hara-mura, Nagano Pref. (southern foot of Mt. Yatsugatake), 29. vii. 1967, T. HATAYAMA lgt.

Host plant. Unknown.

Range. Japan (Honshu).

Toxoscelus yakushimensis m., *T. miwai* m. and *T. sasakii* m. closely stand by *T. rugicollis* E. SAUNDERS, 1874, described from Central Luzon, Philippines. They represent a natural group in the genus *Toxoscelus* DEYROLLE, 1864. While, *T. auriceps* E. SAUNDERS, 1873, and *T. amamiensis* m. are the Japanese representatives of another group including *T. carbonarius* OBENBERGER, 1958, described from Szechuan, China,



Figs. 13–19. Male genital apparatus in the genus *Toxoscelus* from Japan and the Ryukyus. — 13, *T. auriceps* E. SAUNDERS from Kagawa Pref., Japan; 14, *T. auriceps* E. SAUNDERS from Yakushima, Japan; 15, *T. auriceps tokarensis* subsp. nov. from Tokara Is.; 16, *T. amamiensis* Y. KUROSAWA from Amami-Oshima; 17, *T. sasakii* Y. KUROSAWA from Shimabara, Japan; 18, *T. yakushimensis yakushimensis* Y. KUROSAWA from Yakushima, Japan; 19, *T. miwai miwai* sp. nov. from Ishigaki-jima, Ryukyus.

T. fuscus BOURGOIN, 1923, and *T. binodosus* DESCARPENTRIES, 1967, both described from Tonkin. The male genital apparatus is normal in the *rugicollis* group, while, in the *auriceps* group, it is abnormally dilated latero-anteriorly.

***Toxoscelus auriceps* (E. SAUNDERS, 1873)**

Cryptodactylus auriceps E. SAUNDERS, 1873, J. Linn. Soc. London, Zool., 11, p. 513.

Cryptodactylus gracilis SCHÖNFELDT, 1888, Ent. Nachr., 14, p. 244.

Cryptodactylus mandarinus OBENBERGER, 1917, Coleopt. Rundschau, 1917, p. 52. (*Syn. nov.*)

Toxoscelus rugicollis: FISHER, 1921, Philip. J. Sci., 18, p. 481.

Toxoscelus mandarinus: OBENBERGER, 1924, Arch. Naturg., 90 A (3), p. 103.

Toxoscelus similis GEBHARDT, 1928, Coleopt. Centralbl., 3, p. 28. (*Syn. nov.*)

Toxoscelus japonicus OBENBERGER, 1934, Čas. Čs. Spol. Ent., 32, p. 151.

Toxoscelus auriceps: Y. KUROSAWA, 1950, Ent. Rev. Japan, 5, p. 29.

Body small, rather robust, and deplanate above; dorsal side blackish, with aeneous or violaceous tinge, but head and pronotum are always brighter and with stronger bronzy or violet tinge than on elytra; body beneath brighter and more shining than above, with a slight aeneous tinge; antennae tinged with bronzy; legs concolorous with the body above.

Head small, longitudinally grooved from vertex to clypeus; vertex concentrically rugoso-punctate on each side of the median groove; frons subgibbose on each side of the median groove, rugoso-punctate longitudinally on the upper half and transversely on the lower half, and deeply and transversely grooved along the posterior margin of antennal cavities, but the surface is microscopically reticulate all over; clypeal suture inconspicuous; clypeus strongly narrowed by antennal cavities and about twice as long as wide, with the anterior margin arcuately produced; antennal cavities large, subtriangular, with the interior margin narrowly reflexed; eyes slightly converging below, with the interior margin slightly arcuate; antennae short and compact, with the first and second segments stout, the third and fourth about equal in length, the fifth subtriangular, about as long as wide, more than 1.5 times as long as the third and fourth, and about as long as the second, and sixth to apical ones serrate and wider than long.

Pronotum transverse, about 1.6 times as wide as long, and widest at or just before the middle; sides strongly and somewhat semicircularly expanded, very finely crenulate, but they are more strongly attenuate towards the base than towards the anterior margin; anterior angles rather obtuse and slightly produced in dorsal aspect, acute and abased in lateral aspect; anterior margin bisinuate, with the median lobe broadly and arcuately produced; posterior margin bisinuate, with the median lobe broadly and arcuately produced, but the margin is somewhat angulately and broadly emarginate on each side just before each basal lobe of elytra; posterior angles obtuse and rounded; marginal carinae entire, sharply defined and slightly bisinuate in lateral aspect; disk uneven, with a large shallow ante-median depression, an obscure and shallow ante-scutellar depression, and a large, deep, kidney-shaped or ear-shaped depression behind

the middle of each side, but the ear-shaped depression extends lateroanteriorly towards the anterior angle along the lateral margin; surface densely rugoso-punctate, but the rugosity becomes concentric to the centre of the ante-median depression and the centre of the interior part of each ear-shaped depression, and the surface is microscopically shagreened on interstices of the rugae. Scutellum triangular, minutely shagreened, with the anterior margin subtruncate.

Elytra slightly narrower at humeri and broader at the maximum width than pronotum, widest just behind the middle or at apical two-fifths, about twice as long as wide, and about 3.4 times as long as pronotum; sides subangulate at humeri, sinuate to the level of maximum width, where they are arcuately rounded, then obliquely and somewhat arcuately attenuate to apices, which are separately subacute, and very finely denticulato-serrate near apex; humeri distinctly broader than the base of pronotum; suture narrowly and slightly reflexed in posterior third; basal lobe angulate, produced, with the outer side slightly sinuate; disk deplanate, somewhat depressed at the scutellar part, and longitudinally though obsolete depressed along the suture near apex; basal depressions broad and obsolete; surface densely rugoso-imbricate, with the rugae arranged transversely and obliquely in basal half, and densely imbricate in apical half, and ornamented with short, semirecumbent, silver-whitish hairs which are arranged on each elytron as follows: a semicircular band from scutellar part to humeral part; an eye-shaped circular ring at basal third near suture; an elliptically longitudinal, somewhat eye-shaped spot just before the middle, closer to lateral margin than to suture; a strongly zigzag band just behind the middle; a wavy transverse band just behind apical fourth; and the seemingly naked parts between the markings clothed with inconspicuous, blackish, recumbent hairs.

Prosternum somewhat depressed on the disk, reticulate all over the surface and grooved along the anterior margin, which is broadly and arcuately emarginate at the middle, angulately produced and lobed on each side of the emargination; prosternal process broad, flattened, with the sides slightly converging behind and oblique between anterior coxal cavities, but they are angulate just behind anterior coxal cavities and then attenuate to sharply pointed tip. Metasternum longitudinally grooved at the middle. Abdomen beneath brighter than above; apex of the last ventral segment slightly and broadly angulate, with the sides oblique and straight (male), or broadly rounded, with the margin adorned with four, rather similar-sized, sharp but short denticles on each side (female). Legs short, robust, with the anterior tibiae arcuately curved, the middle tibiae strongly and semicircularly curved, and the posterior tibiae rather straight, with the interior ridge sinuate and adorned with sparse black brush-like hairs on the outer edge.

Length: 4.1–6.2 mm; width: 1.4–2.0 mm (elytra+abdomen).

Host plants. *Castanea crenata* SIEB. et ZUCC., *Castanopsis lutchuensis* NAKAI, *Castanopsis Sieboldii* NAKAI, *Castanopsis cuspidata* SCHOTTKY, *Quercus serrata* THUNBERG, and *Quercus aliena* BLUME.

Range. Japan (Hokkaido, Honshu, Shikoku, Kyushu, Yakushima, Tsushima),

Korea, China.

The author already pointed out in 1950 that *Cryptodactylus gracilis* SCHÖNFELDT, 1888, and *Toxoscelus japonicus* OBENBERGER, 1934, both described from Japan, were synonyms of *Cryptodactylus auriceps* E. SAUNDERS, 1873, and he transferred *auriceps* from *Cryptodactylus* to *Toxoscelus*. He also considered that *Toxoscelus rugicollis* E. SAUNDERS, 1874, recorded by FISHER (1921) from Kobe, Japan, was a misidentification of *auriceps*. In 1973, the author examined in Europe the types of several species described from the Continent and confirmed that *Cryptodactylus mandarinus* OBENBERGER, 1917, described from Kiautschou, Shantung, North China, and *Toxoscelus similis* GEBHARDT, 1928, described from Chekiang, Central China, are also mere synonyms of *auriceps*. He examined the types of these species preserved in the Muséum National d'Histoire Naturelle, Paris, and the National Museum (Museum of Natural History), Prague.

Toxoscelus auriceps tokarensis subsp. nov.

Different from typical *auriceps* from Japan proper in the following points: 1) body brighter, with a distinct aeneous tinge above; 2) elytra strongly and coarsely imbricate; 3) apex of the last ventral segment obtusely angulate and sinuate on each side (male).

Length: 6.0 mm; width: 2.0 mm (elytra+abdomen).

Holotype: ♂, Nakanoshima I., Tokara Islands, 23. vi. 1962, H. YOKOYAMA lgt.

Host plant. Unknown, but presumably *Castanopsis lutchuensis* NAKAI.

Range. Ryukyu Islands (Tokara group).

Toxoscelus amamiensis Y. KUROSAWA, 1963

Toxoscelus auriceps amamiensis Y. KUROSAWA, 1963, Iconogr. Ins. Japon., 2, p. 151.

Body small and robust, and subparallel above; dorsal side blackish, with a slight violaceous or aeneous shimmer; ventral side blackish, with a slight but distinct aeneous tinge; legs concolorous with the body above on the upper surface and with the body beneath on the under surface; antennae nigro-aeneous, somewhat brighter than the other parts.

Head small, longitudinally but shallowly grooved from vertex to the centre of frons (male) or to near clypeus (female); vertex concentrically rugose on each side of the groove; frons somewhat convex and strongly rugose, with an impression of something like + -shape, but the intervals of the rugae are densely and finely reticulato-imbricate and the part just above each antennal cavity forms a transverse, broad, and deep groove; clypeal suture absent; clypeus narrow, I-shaped, depressed between the elevated margins of antennal cavities, with the anterior margin strongly and semi-circularly produced; antennal cavities large, with the interior margin distinctly but narrowly elevated; eyes feebly converging below, with the interior rim arcuately emarginate; antennae short and compact, with the first and second segments stout, rather fusiform, the latter shorter than the former, the third and fourth about equal in size

and length, the fifth to the apical ones compact and strongly serrate though each one of them is distinctly wider than long.

Pronotum transverse, dilated in front, about 1.65 times as wide as long, and widest just before the middle; sides strongly, arcuately or semicircularly expanded, somewhat sinuate before the posterior angle, and very finely and inconspicuously crenulate; anterior margin bisinuate, with the median lobe broadly and arcuately produced; anterior angles slightly produced and somewhat acute in dorsal aspect, abased, acute, and well-defined in lateral aspect; posterior margin bisinuate, with the median lobe broadly and arcuately produced, but the emargination on each side of the lobe is somewhat angulate; posterior angles blunt, obtuse and produced; marginal carinae entire, sinuate posteriorly in lateral aspect; disk strongly uneven, with a broad shallow median depression, a broad, rather deep depression on each latero-posterior side of the median one, and a large obsolete, rather ear-shaped depression on each side, but the ear-shaped depressions extend along the lateral margins and somewhat conjunct with each latero-posterior depression; surface strongly but irregularly rugose, with the rugae somewhat concentric in the median and latero-posterior depressions, and the intervals are very finely imbricate. Scutellum subtriangular, with the anterior margin slightly arcuate and the surface minutely shagreened.

Elytra slightly narrower than pronotum at humeri, as wide as or slightly broader than that at posterior two-fifths, which is the widest part, about twice as long as wide and about 3.3 times as long as pronotum; sides subangulate at humeri, obliquely expanded and obtusely angulate just behind humeri, sinuate from there to the level of the maximum width, where they are arcuately rounded, then obliquely but somewhat arcuately attenuate to apices, which are narrow, somewhat acute, and very obtusely and finely denticulato-serrate near apex; humeri distinctly broader than the base of pronotum, but narrower than its maximum width; suture narrowly and slightly reflexed in posterior half; basal lobes obtusely angulate, not so strongly produced as in *auriceps*; disk deplanate, with the basal depressions large, extending from the scutellar part to the shoulder; surface entirely punctato-imbricate, somewhat rugose laterally, but the rugosity is not so strong and distinct as in *auriceps*; ornamentation of the semi-recumbent silver-whitish hairs arranged as follows: a narrow, obscure, semicircular or angulate band from the scutellar part to shoulder; an eye-shaped circular spot at basal third near suture; a longitudinal oblongo-elliptical eye spot just before the middle far closer to the lateral margin than to the suture; a transverse, strongly wavy band just behind the middle; a distinct wavy band just behind the apical fourth; but the parts between the markings are clothed with inconspicuous, blackish, recumbent hairs.

Prosternum impressed along the anterior margin, irregularly, obsoletely and shallowly depressed on the disk and imbricato-reticulate all over the surface; anterior margin broadly emarginate between two angulate lobes; prosternal process broad, rather flattened, with the sides constricted between anterior coxal cavities, slightly expanded and angulate just behind them, then strongly converging to apex, which is sharply pointed but blunt at the tip. Metasternum longitudinally grooved at the middle.

Abdomen beneath brighter than the other parts; apex of the last ventral segment slightly but broadly and obtusely angulate, and slightly sinuate on each side (male), or broadly rounded with the margin adorned on each side with four denticles which are strongly pointed though blunt at the tip (female). Legs short and robust; anterior tibiae curved, more strongly bent in the basal part than in the apical part; middle tibiae strongly and semicircularly curved; posterior tibiae rather straight with the interior ridge sinuate and densely adorned with blackish brush-like erect hairs on the outer edge.

Length: 4.6–5.8 mm; width: 1.6–2.1 mm (elytra+abdomen).

Holotype (♂) and paratopotypes: 3 ♂♂, 4 ♀♀, Naze, Amami-Oshima, 14–15. vi. 1961, T. SHIBATA lgt.; paratypes: 1 ♂, 1 ♀, do., 24. vi. 1961, K. YAMADA lgt.; allotype (♀) and paratypes: 1 ♂, 3 ♀♀, Kominato, Amami-Oshima, 29. v. 1960, K. YAMADA lgt.

The present species has a close external resemblance with *T. auriceps* E. SAUNDERS, 1873, described from Japan proper and known also from Korea and China, but by the shape of genital apparatus, these two species can be distinguished at a glance. The parameres of the present species are strongly dilated and expanded latero-apically but triangularly emarginate at the apex (Fig. 16).

Host plant. Unknown, but presumably *Castanopsis lutchuensis* NAKAI.

Range. Ryukyu Islands (Amami-group).

***Toxoscelus yokoyamai* sp. nov.**

Body robust and somewhat deplanate above; dorsal side entirely blackish with a slight violet tinge, especially on head and pronotum; ventral side black, with a slight aenescent tinge; antennae concolorous with the body beneath; legs concolorous with the body above on the upper surface, and with the body beneath on the under surface.

Head rather small, broadly and rather longitudinally depressed on the centre of the upper half of frons towards vertex; vertex and the upper half of frons longitudinally rugoso-punctate on each side of the depression; lower half of frons transversely rugoso-punctate, with a deep transverse groove above antennal cavities, but the groove forms T-shaped deep impression with clypeus, which is constricted by antennal cavities at the base, entirely depressed, microscopically and transversely rugose, with the anterior margin somewhat arcuately but very slightly emarginate; antennal cavities large, deep, margined with sharply elevated carina interiorly and posteriorly, but are not bordered from clypeus anteriorly and opened laterally; antennae short and compact, serrate from the fourth segment, with the first segment largest, longest and stoutest, the second subglobular, the third subfusiform, slightly shorter than the second, the fourth slightly longer than wide and longer than the third, the fifth about as long as wide and shorter than the fourth, and the following six segments each always wider than long and shorter than the fifth.

Pronotum transverse, about 1.7 times as wide as long, and widest just before the middle; sides strongly, semicircularly expanded laterally, with the margins narrowly

elevated and finely crenulate; anterior margin bisinuate, with the median lobe broadly produced; anterior angles produced and subrectangular in dorsal aspect, but strongly abased and sharply produced in lateral aspect; posterior margin angulately emarginate on each side of the median lobe which is broadly and arcuately produced; posterior angles blunt and obtuse; marginal carinae entire, and somewhat bisinuate in lateral aspect; disk uneven, with the median depression distinct, somewhat †-shaped in anterior half, an ear-shaped depression on each side of the posterior half and a very large, deep, and longitudinal depression along each lateral margin; surface densely rugosopunctate, but the rugosity is sparser, weaker, with the intervals broad and flattened, not elevated, and somewhat concentric to the median depression of the anterior half. Scutellum subtriangular, pointed posteriorly, minutely shagreened, with the anterior and lateral margins somewhat arcuately emarginate.

Elytra feebly broader than pronotum at humeri, widest at apical three-fifths, about twice as long as wide and about 3.2 times as long as pronotum; sides subrectangular but rounded at humeri, slightly expanded just behind there, broadly sinuate to apical three-fifths, where they are arcuately swollen, then obliquely attenuate towards apices, which are separately rounded with the margins very finely and obscurely serrate; suture somewhat reflexed in apical two-fifths; basal lobes not so strongly produced than in the other species; basal depressions obsolete, extending from humeri to just behind scutellum along the margin; disk deplanate along suture; surface densely, coarsely and transversely rugoso-punctate in basal half, coarsely and densely imbricate in posterior half, but the punctures on rugae are large, shallow and somewhat confluent with each other; ornamentation by silver-whitish short recumbent hairs arranged on each elytron as follows: a narrow wavy band which extends upwards along scutellum and then obliquely to just behind humerus; an eye-shaped round ring at basal third near suture; an obscure longitudinally elliptical spot just before the middle near the side; a zigzag transverse band just behind the middle; a wavy band, which extends towards apex along suture, at apical fourth; other parts which are not covered by silver-whitish hairs are more or less clothed with recumbent short blackish hairs.

Prosternum convex, impressed along the anterior margin, and coarsely and variolately punctate, but the punctuation becomes somewhat transversely rugose on the process; anterior margin broadly and arcuately emarginate between two broadly angulate lobes; prosternal process broad, slightly convex, with the sides slightly oblique to just behind anterior coxal cavity, where they are angulate, then strongly attenuate to apex, which is strongly and sharply pointed. Metasternum transversely rugoso-imbricate, and longitudinally but slightly grooved at the middle. Abdomen beneath brighter than above, finely imbricato-reticulate, and rather uniformly clothed with short, recumbent, dark brown-greyish hairs; apex of the last ventral segment rounded and adorned with three distinct denticles on each side, but the tip of each denticle is somewhat truncate (female). Legs short, robust, but slenderer than in the other species; anterior tibiae curved; middle tibiae curved in basal half, rather straight in apical half; posterior tibiae straight, with brush-like blackish hairs on outer ridge.

Male unknown.

Length: 6.7 mm; width: 2.3 mm (elytra+abdomen).

Holotype: ♀, Lien-hwa-chi, Central Formosa, 21. v. 1974, H. YOKOYAMA lgt.

Host plant. Unknown.

Range. Formosa.

The present species closely stands by *T. auriceps* E. SAUNDERS from Japan, Korea and China, but differs from it in the points mentioned in the key.